REMARKS

Claims 1, 14, 15, and 16 have been amended to more clearly recite Applicants' invention. Support for the amendments to claims 1, 14, 15, and 16 may be found throughout the specification. Upon entry of this Amendment, claims 1-20 remain pending.

In the Office Action dated January 5, 2006, claims 1-6, 8-16, and 20 were rejected under 35 U.S.C. §102(b) as being anticipated by Somekh (U.S. Patent No. 6,427,703). Applicants respectfully traverse this rejection.

Independent claim 1, as amended, recites a lithographic projection apparatus that includes, *inter alia*, "a downstream radical source having a tube connected to a gas supply and configured to provide a beam of radicals directed onto a surface to be cleaned, wherein the radicals are generated within a flow of gas from the gas supply in the tube." Somekh does not disclose or suggest all of the features of claim 1.

Somekh discloses a lithography system (200) that includes an oxidizer source (216) that introduces an oxidizer into an illumination chamber (204) and a process chamber (220). (Somekh at col. 6, lns. 19-22.) Somekh discloses that the oxidizer is provided by the oxidizer source (216) in an activated state. (Somekh at col. 6, lns. 37-38.) Thus, Somekh teaches to generate the oxidizer within the oxygen source (see also Somekh at FIG. 2A), and not within a flow of gas from the source in a tube. The only specific example of activating the oxidizer that Somekh discloses is having microwave circuitry in the oxidizer source itself to activate the oxidizer. (Somekh at col. 6, lns. 42-45.) Somekh does not disclose or suggest activating the oxidizer after it has flowed out of the source (216). Hence, Somekh does not disclose or suggest a lithographic projection apparatus that includes, *inter alia*, "a downstream radical source having a tube connected to a gas supply and configured to provide a beam of radicals directed onto a surface to be cleaned, wherein the radicals are generated within a flow of gas from the gas supply in the tube," as recited by claim 1.

Accordingly, Applicants respectfully submit that claim 1 is patentable over Somekh, and respectfully request that the rejection to claim 1 and claims 2-6, and 8-13 that depend therefrom be withdrawn.

Independent claim 14, as amended, recites a device manufacturing method that includes, *inter alia*, "providing a flow of gas from a gas supply," and "generating a beam of radicals in the flow of gas from the gas supply in a tube of a downstream radical source." Somekh does not disclose or suggest all of the features of claim 14. Somekh is discussed

above. The oxidizer in Somekh is generated in the oxidizer source (216), and not "in the flow of gas from the gas supply in a tube of a downstream radical source," as recited by claim 14.

Accordingly, Applicants respectfully submit that claim 14 is patentable over Somekh and respectfully request that the rejection to claim 14 be withdrawn.

Independent claim 15, as amended, recites a lithographic projection apparatus that includes, *inter alia*, "a radical source connected to a gas supply and configured to generate a localized beam of radicals in a flow of gas from the gas supply in a tube of the radical source." Somekh does not disclose or suggest all of the features of claim 15. As discussed above, Somekh teaches that the oxidizer is generated in the oxygen source (216). Somekh does not disclose or suggest a separate radical source that is connected to a gas supply and configured to generate a localized beam of radicals in a flow of gas from the gas supply in a tube of the radical source, as recited by claim 15.

Accordingly, Applicants respectfully submit that claim 15 is patentable over Somekh, and respectfully request that the rejection to claims 15 and 16 and 20 that depend therefrom be withdrawn.

In the Office Action, claim 7 was rejected as being unpatentable over Somekh in view of Horiike et al. (U.S. Patent No. 5,308,791). Applicants respectfully traverse this rejection.

Claim 7 depends from claim 1. As discussed above, claim 1 is patentable over Somekh. Horiike et al. does not cure the deficiencies of Somekh. Horiike et al. discloses an apparatus for processing the surface of an Si wafer. (Horiike et al. at Abstract.) The apparatus includes a cleaning chamber (3) for cleaning the wafer (1). (Horiike et al. at col. 4, lns. 15-28.) The wafer (1) is cleaned in the cleaning chamber (3) prior to being moved into the process chamber (8) for processing. (Horiike et al. at col. 5, lns. 27-48.) Hence, the combination of Horiike et al. and Somekh does not disclose or suggest all of the features of claim 7. Accordingly, Applicants respectfully submit that claim 7 is patentable over Somekh in view of Horiike et al. and respectfully request that the rejection to claim 7 be withdrawn.

In the Office Action, claims 18 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Somekh in view of Vane (U.S. Patent No. 6,105,589). Applicants respectfully traverse this rejection.

Claim 18 depends from claim 16, which depends from independent claim 15. Claim 19 depends from claim 18. As discussed above, claim 15 is patentable over Somekh. Vane does not cure the deficiencies of Somekh. Vane discloses a method and apparatus for

cleaning electron microscopes. (Vane at Abstract.) Vane discloses that a plasma chamber (50) is provided to project a plasma into the full specimen chamber (4). (Vane at col. 7, ln. 54 – col. 8, ln. 3; FIG. 1.) The plasma chamber (50) is separate from the gas supply (42) and gas from the gas supply (42) is fed into the chamber (4) and into the plasma. (Vane at col. 8, lns. 17-26; FIG. 1.) Oxygen radicals from the plasma are carried into the chamber by convection. (Vane at col. 8, lns. 24-25.) Vane does not disclose or suggest that the plasma generates a localized beam of radicals and, hence, does not disclose or suggest "a radical source connected to a gas supply and configured to generate a localized beam of radicals in a flow of gas from the gas supply in a tube of the radical source," as recited by claim 15.

Moreover, Vane specifically states that the conductive screen (53) described at col. 7, lns. 62-66 is not a trap for the charged species of the plasma, but instead confines the electric fields and defines and fixes the impedance between the glow electrode (51) and the plasma chamber (50) walls. (Vane, col. 7, lns. 62-66.) Vane simply does not disclose or suggest that a Faraday grid neutralizes the ionized particles, as recited by claim 18. Accordingly, Applicants respectfully submit that claims 18 and 19 are patentable over Somekh in view of Vane and respectfully request that the rejection to claims 18 and 19 be withdrawn.

In the Office Action, claim 17 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Somekh in view of Sakai et al. (U.S. Patent No. 5,312,519). Applicants respectfully traverse this rejection.

Claim 17 depends from claim 16, which depends from claim 15. As discussed above, claim 15 is patentable over Somekh. Sakai et al. does not cure the deficiencies of Somekh. Sakai et al. discloses a discharge tube (18) that selectively supplies active species of F*(radical) and O*(radical) to a chamber (3). (Sakai et al. at col. 3, lns. 49-58.) The active species are generally supplied to the chamber (3) and are not formed into a localized beam (See Sakai et al. at col. 3, ln. 62 – col. 4, ln. 39.) Moreover, claim 17 recites that "walls of the tube neutralize the ionized particles." Sakai et al. discloses that gasses are dissociated in the quartz discharge tube (18) (Sakai et al. at col. 3, lns. 49-50), not that ionized particles are neutralized, as recited by claim 17. Accordingly, Applicants respectfully submit that claim 17 is patentable over Somekh in view of Sakai et al. and respectfully request that the rejection be withdrawn.

All rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited. If

any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
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